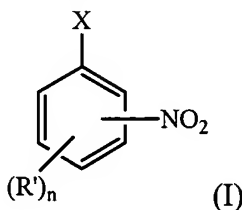


said carbon monoxide is present at a pressure of 14.7- 1100 psi;
 said alcohol is a linear or branched, substituted or unsubstituted C₁-C₅ alkyl alcohol;
 said proton acceptor is a tertiary amine base; and
 said metal catalyst is a heterogeneous catalyst of palladium metal deposited on activated carbon present in an amount of between about 1 weight percent and 500 weight percent based on said nitro-substituted aryl halide.

23. A process of claim 22, wherein said tertiary amine base is selected from the group consisting of triethylamine and tri-n-butylamine.

24. A process of claim 22, wherein said reacting step occurs in the presence of a solvent selected from the group consisting of an excess of said alcohol, an excess of said proton acceptor, an aliphatic hydrocarbon, an aromatic hydrocarbon, a cyclic ether, an acyclic ether, a polar aprotic solvent, and mixtures thereof.

25. A process of claim 22, wherein said nitro-substituted aryl halide is of formula (I):

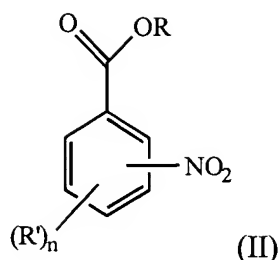


wherein

X is chloro, bromo, or iodo;

n is an integer of 1-4;

each R' is, independently, a C₁-C₁₀ alkyl group, a C₂-C₁₀ alkenyl group, a C₂-C₁₀ alkynyl group, a C₄-C₁₀ aryl or heteroaryl group, an ether, a thioether, a nitro, a trifluoromethyl, a fluoro, cyano, or acyl group; or together with the phenyl ring forms a substituted or unsubstituted fused polycyclic ring system; and
 said corresponding nitro-substituted aromatic carboxylic acid ester is of formula (II):



wherein

n and R' are as defined above; and

R is a C₁-C₅ alkyl group.

26. A process of claim 25, wherein n is 1, R' is a trifluoromethyl group, and R is a methyl or n-butyl group.

27. A process of claim 26, wherein R' is para to halide X of formula (I) and the nitro group is ortho to halide X of formula (I).

28. A process for the preparation of a thioether-substituted aromatic carboxylic acid ester comprising the steps of:

preparing a nitro-substituted aromatic carboxylic acid ester according to claim 22, and
reacting the said nitro-substituted aromatic carboxylic acid ester with a thiolate anion to form the corresponding thioether-substituted aromatic carboxylic acid ester.

29. A process of claim 28, wherein said thiolate anion is prepared *in situ* from a thiol and a base, wherein

said base is selected from the group consisting of tertiary amines, alkali or alkaline earth metal hydroxides, and alkali or alkaline earth metal carbonates.

30. A process of claim 29, wherein said thiolate anion is a compound of the formula R''S⁻M⁺, wherein

R'' is a C₁-C₁₀ alkyl group or a C₄-C₁₀ aryl or heteroaryl group; and

M is selected from the group consisting of sodium, potassium and ammonium.

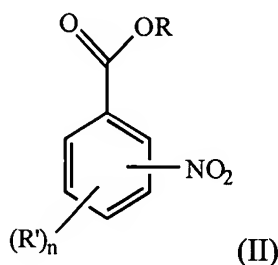
31. A process of claim 28, wherein said reacting step is conducted in a homogeneous solvent system comprising a water-miscible solvent and water, or in a phase-transfer solvent system comprising a water-immiscible organic solvent, a phase-transfer catalyst, and, optionally, water.

32. A process of claim 31, wherein said reacting step is conducted in a phase-transfer solvent system wherein

said phase-transfer catalyst is a tetralkylammonium or tetralkylphosphonium salt selected from the group consisting of tetrabutylammonium bromide, tetrabutylammonium chloride, methyltributylammonium chloride, methyl trioctylammonium chloride, and tetrabutylphosphonium bromide; and

said water-immiscible solvent is selected from the group consisting of an aliphatic hydrocarbon, an aromatic hydrocarbon, a cyclic ether, and an acyclic ether.

33. A process of claim 30, wherein said nitro-substituted aromatic carboxylic acid ester is of formula (II):



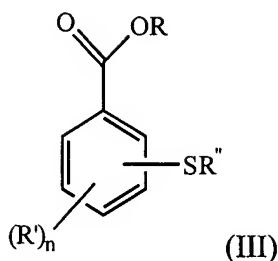
wherein

n is an integer of 1-4;

each R' is, independently, a C₁-C₁₀ alkyl group, a C₂-C₁₀ alkenyl group, a C₂-C₁₀ alkynyl group, a C₄-C₁₀ aryl or heteroaryl group, an ether, a thioether, a nitro, a trifluoromethyl, a fluoro, cyano, or acyl group; or together with the phenyl ring forms a substituted or unsubstituted fused polycyclic ring system; and

R is a C₁-C₅ alkyl group; and

said corresponding thioether-substituted aromatic carboxylic acid ester is of formula (III):



wherein

n, R', and R are as defined above; and

R'' is a C₁-C₁₀ alkyl group or a C₄-C₁₀ aryl or heteroaryl group.

34. A process of claim 33, wherein R' is para to the ester group of formula (II) and the nitro group is ortho to the ester group of formula (II).

35. A one-pot process for the preparation of a thioether-substituted aromatic carboxylic acid ester comprising the steps of:

reacting a nitro-substituted aryl halide, in the absence of water and oxygen, with carbon monoxide and an alcohol in the presence of a metal catalyst and a proton acceptor to form the corresponding nitro-substituted aromatic carboxylic acid ester,

wherein:

said aryl group of said nitro-substituted aryl halide is a substituted or unsubstituted, monocyclic or polycyclic aryl group or heteroaryl group containing at least one heteroatom of N, O, or S;

said carbon monoxide is present at a pressure of 14.7- 1100 psi;

said alcohol is a linear or branched, substituted or unsubstituted C₁-C₅ alkyl alcohol;

said proton acceptor is a tertiary amine base; and

said metal catalyst is a heterogeneous catalyst of palladium metal deposited on activated carbon present in an amount of between about 1 weight percent and 500 weight percent based on said nitro-substituted aryl halide, and

reacting without isolating said corresponding nitro-substituted aromatic carboxylic acid ester with a thiolate anion to form the corresponding thioether-substituted aromatic carboxylic acid ester.